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ABSTRACT

The document describes a practicum which developed a unit on critical thinking that applied Jerome Bruner's discovery-learning method and also incorporated the unit within the curricular requirements of elementary education majors at Castleton State College in Vermont. It is presented in five sections and an appendix. Section I provides introductory material, including the rationale. Section II explains the background and significance of the practicum, exploring the critical thinking theories of David Wright, Benjamin Bloom, Hilda Taba, Jerome Bruner, and J. Richard Suchman. Section III defines discovery/inquiry learning as finding "the regularities of previously unrecognized relations and similarities between ideas with a resulting sense of self-confidence in one's abilities." Reasoning competencies/critical thinking skills are defined as "processes inclusive of, but not limited to problem solving, classification and organization, making reasoned judgments, and logic." Procedures used in developing the miniunit are explained. Section IV lists the results of the practicum, including development of the unit, an increase in students' knowledge of reasoning competencies, and the unit's inclusion in a required education course. Section V examines implications and recommends further research and modifications. The appendix presents the unit, including rationale and objectives, a list of 15 basic reasoning competencies, and 27 possible teaching activities related to each competency. Activities include reports, class visits, map work, classification activities, and dilemma solution. (CK)

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THE DEVELOPMENT OF CRITICAL THINKING SKILLS
FOR ELEMENTARY EDUCATION MAJORS AT
CASTLETON STATE COLLEGE

LEARNING THEORY AND APPLICATIONS
CORE MODULE

by

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VERMONT CLUSTER

A PRACTICUM PRESENTED TO NOVA UNIVERSITY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

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ABSTRACT

The purpose of the practicum study was to develop a critical thinking unit that applied Jerome Bruner's discovery learning method and to incorporate it into the curricular requirements for education majors at Castleton State College. Because of a recent emphasis on the development of teacher competencies in teacher preparation programs and the Vermont State Department's requirements for high school graduates to have developed reasoning competencies, it was very evident that there was a need for a critical thinking unit in the Castleton State College education program. Using the Vermont State Education Department's proposed competency Teacher's Guide For Reasoning, and Bruner's The Process of Education. After lectures and discussions on the critical thinking skills and Bruner's inquiry learning method, the students prepared activities that could be used in the elementary classroom using an inquiry method to develop children's critical thinking skills. Some of these suggested activities were included in the Critical Thinking Unit that will be required of Castleton State College education majors in the future. For the first time, as a comprehensive unit in part of the course requirements in "Teaching Social Studies in the Elementary School", all education students will

receive instruction in the critical thinking skills and the inquiry method to learning. Thus, the Castleton State College education majors will be in a better position to teach many of the State Education Department's requirements of teaching Vermont children the various reasoning competencies.

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I. INTRODUCTION

Previous to this practicum there was no complete unit on the topic of critical thinking taught consistently within the Castleton State College education department. Although there was no comprehensive unit on critical thinking skills taught to education majors at the college, the demands for greater accountability of the institutional level and the State Education Department level have required that graduates of the Castleton State College teacher preparation program have the competency to understand and teach these thinking skills. Thus, this practicum developed a unit on critical thinking that applied Bruner's discovery learning method and incorporated the unit within the curricular requirements of education majors at Castleton State College.

With the new trend of accountability has come an emphasis on the development of teacher competencies. As a result, the education department at Castleton State College in 1977 developed and established a list of minimum teacher competencies for all education majors. One of these competencies addressed itself directly to the critical thinking skills area by requiring the teacher intern, "to help the student arrive at a high level of thinking."¹ Although this competency is required for all education majors, there did not exist any unit of work on the subject taught consistently in a comprehensive manner within the college curriculum.

In addition to the Castleton State College education department teaching competency dealing with critical thinking, the Vermont Department of Education recently proposed fifteen reasoning competencies to be included in the state's Basic Competencies. All classroom teachers are required to maintain a Progress Record on the mastery of each of these Basic Competencies for every student within their classroom. By 1981, all Vermont high school seniors will be required to have passed all of the Basic Competencies before graduating.

The following is a list of the reasoning competencies that will be expected of all graduating high school seniors in Vermont.

BASIC COMPETENCIES

REASONING²

1. Observes and reports data.
2. Identifies problems and issues.
3. Suggests problem causes.
4. Suggests problem solutions.
5. Predicts consequences.
6. Identifies similarities and differences.
7. Groups items by direction.
8. Groups items by self.
9. Puts items into serial order.
10. Distinguishes fact from opinion.
11. Takes positions on dilemmas.
12. Makes conclusions from data.
13. Evaluates conclusions.
14. Gathers data from three sources.
15. Organizes data into report.

II. BACKGROUND AND SIGNIFICANCE

The following table represents those areas that were assimilated with the basic reasoning competencies mentioned earlier and developed into the critical thinking unit that was presented to the first group of education majors at Castleton State College.

Table 1
Topic List of Possible Areas to be Taught
in the Critical Thinking Unit³

Concepts of Reasoning Arguments or Evidence	Set One Subconcepts	Set Two Subconcepts
1. Generalization	Over- Generalization	Valid Generalization
2. Representation	Over- Simplification	Valid Representation
3. Inference	Invalid- Inference	Valid Inference
4. Analogy	Incomplete Analogy	Complete Analogy
5. Explanation	Insufficient Explanation	Sufficient Explanation
6. Information Source	Unreliable Data Source	Reliable Data Source
7. Justification	Emotional Appeal	Reasoned Appeal
8. Attribution	Personal Response	Substantive Response

Wright defined critical thinking as the set of intellectual operations that take place when an individual responds critically when confronted with valid or invalid comments, arguments, or evidence of some other person's reasoning.⁴

When Bloom used the term "evaluation" he was in fact, describing critical thinking skills, since he defines evaluation "as the making of judgments about the value, for some purpose, of ideas, works, solutions, methods,

materials, etc. It involves the use of criteria as well as standards for appraising the extent to which particulars are accurate, effective, economical or satisfying. The judgements may be either quantitative or qualitative and the criteria may be either those determined by the student or those which are given to him."⁵

Burnham and Murphy (1976), in their study of reasoning power of elementary students, found that the most successful way of involving students was by use of role playing techniques. They also concluded that there was a great need for an objective instrument that would measure the reliability and validity of answers showing the reasoning process.⁶

In an extensive study of elementary school children's thinking process, Taba (1964) concluded that students who were good at data discrimination and were taught specific evaluating thinking skills tended to increase their proficiency as data discriminators. It was also found that the students who were very poor data discriminators first tended to overgeneralize the data, but later began to develop competencies to be good information discriminators.⁷

Bruner argued that problem solving involved the three steps of activation, maintenance and direction. The first, that of activation, involved the start of exploring alternatives to a problem that has been confronted. This also involved the proper level of curiosity.

The maintenance of exploring, that of continuing to seek alternatives, depended to a great extent on the positive aspects of exploring as outweighing the negative factors of the activity.

The direction of exploration of alternatives was something that prevented the problem solving process from becoming a totally random process. Thus, direction included the knowledge of the task and the listing of options to the solution of the problem as being able to provide informational feedback.⁸

The essence of discovery is, "A matter of rearranging or transforming evidence in such a way that one is enabled to go beyond the evidence so reassembled to new insights." 9

Jerome S. Bruner has argued that there are often four positive aspects that occur to a student when being taught by a discovery learning method. The first was the expansion of the student's intellectual possibilities; the second was that there tended to be a change from a student who operated with external motivation to internal motivation; thirdly, the student tended to develop a learning system whereby future discoveries were possible; and finally, discovery learning helped the student to remember and recall information previously learned. Thus, discovery learning involved those values, perceptions, plans, and skill which allowed the student to recognize and solve problems confronting him or her throughout life. 10

Suchman found that in order to teach inquiry skills in the classroom three conditions were necessary. The first was focus, the need for student attention through a stimulus or problem solving situation. The second classroom condition was freedom. This factor includes both external, the student's right to seek whatever data in whatever manner he chooses, and internal, the student's right to make his own decisions in satisfying his own needs. The last factor, necessary for teaching inquiry, is what is called a "responsive environment". The student needs a condition where if he seeks information, he will in fact, receive some data back. Suchman argues that these conditions lead to student self motivation as opposed to teacher structured learning experiences. 11

Much of what Bruner articulated as inquiry learning theory culminated in a flexible social studies curriculum in 1965. He attempted to implement his discovery learning method in a middle grade level elementary social studies curriculum entitled Man: A Course of Study. The entire course of study is based on the underlying questions: (1) What is human about human beings? (2) How did

they get that way? (3) How can they be made more so? These fundamental questions regarding man are raised through the presentation of contrasting elements of various animals. Three of the primary objectives of the course are:

- " . To give pupils confidence in the powers of their own mind.
- . To give them respect for the powers of thought concerning the human condition, man's plight and man's potential.
- . To provide them with a set of workable models for analyzing the nature of the social world in which they live, the condition in which man finds himself."¹²

III. PROCEDURES

For the purposes of this study the terms discovery learning and inquiry learning have been used interchangeably. This has also been true for the use of the terms reasoning competencies and critical thinking skills.

Thus the following terminology was defined:

Discovery Learning (Inquiry Learning).

When the learner finds "the regularities of previously unrecognized relations and similarities between ideas with a resulting sense of self-confidence in one's abilities."¹³

Reasoning Competencies (Critical Thinking Skills.)

Reasoning competencies are the "processes inclusive of, but not limited to problem solving, classification and organization, making reasoned judgements, and logic. These processes are affected by such variables as conditions, environments, and abilities. Definitions and suggested assessments deal essentially with reasoning in the cognitive area.

The components of the reasoning process are: (1) Problem Solving is the ability of one to identify a problem suggest possible causes, probable solutions and predict consequences of those solutions. (2) Classification and Organization address abilities to group objects, ideas, and concepts, to sequence and in doing that to distinguish between factual data and opinion. (3) The ability to make reasoned judgements involves one's capabilities to review and summarize information and take a defensible position; and to understand the views, reasons, and conclusions of others. (4) Research skills involve the use of commonly available sources to gather and organize information."¹⁴

After an analysis of the research on discovery learning and critical thinking skills, a mini unit using the discovery learning method to teach the reasoning competencies was developed for use during the 1978 summer session. As part of this mini unit on the critical thinking skills:

1. All students were required to read the Vermont Teacher's Guide for Reasoning.
2. All students were required to read Bruner's The Process of Education.
3. There were class presentations and discussions on both of the above books.
4. There was a class presentation and discussion of the discovery learning method.
5. As a culmination of the four above steps, all students developed a lesson plan for activities of children that used Bruner's discovery learning method as a means of teaching the Vermont Reasoning Competencies.

As part of the course, "Materials and Methods in Elementary Education", taught during the 1978 summer session at Castleton State College, a mini unit on Critical Thinking Skills that applied Bruner's discovery learning method was taught. The foundation and structure of this unit was based upon the proposed Vermont State Department of Education's Teacher's Guide for Reasoning.¹⁵

As a requirement for the summer course, each education major developed a plan for student activity that used Bruner's learning discovery method for implementing the Vermont Reasoning Competencies in elementary schools. After each of the college students developed one lesson plan for student activities in discovering the reasoning competencies, the class discussed implications and other variables that were learned during the lesson.

During the critical thinking phase of the course, John Stevens, the former Vermont State Department of Education Science Consultant, one of the authors of the reasoning guide, attended the class session and provided suggestions and comments regarding the Vermont reasoning competencies and some of the student activities that were used to implement them.

The final product of the practicum incorporated the suggestions and some of the lesson plans of children's activities developed by the summer session college students into a critical thinking unit that will in the future be taught

to all education majors in the required course of "Teaching Social Studies in the Elementary Schools." Since this course is required for all elementary education majors at Castleton State College, all certified elementary education teachers graduating from the institution will have a unit module on the critical thinking skills.

IV. RESULTS

One of the initial results of the practicum was the development of a unit (see Appendix A, p.18) on critical thinking skills that would be taught to all education majors. Although the major source of the unit was the Vermont State Education Department's Teacher Guide for Reasoning, additional classroom activities to teach the reasoning competencies were expanded and elaborated on in further detail.

It was found that teaching a unit on critical thinking skills to education majors increased their specific knowledge of the competencies and also increased the comfort level of these future teachers to deal with reasoning skills, an area never before presented to them in a comprehensive manner.

The consensus of the class was that Bruner's The Process of Education did not provide a detailed enough commentary on the inquiry learning method. It was also felt that although the inquiry learning approach was valid and logical in the students' own experiences, it was, however, only one means of successfully expanding the various learning patterns of different children. Other methods of learning theories, such as behavior modification, should be included in the presentation of the unit on the critical thinking skills.

The majority of education majors in the class, "Materials and Methods in Elementary Education", during the 1978 summer session felt that the Vermont State Education Department's proposed competencies, Teachers' Guide for Reasoning did not offer as many specific suggestions to the teacher for examples of presenting the reasoning skills in sequential manner at each of the grade levels.

* When this concern was expressed to John Stevens, former State Education Department consultant, who co-authored the guide, he stated that the limitation was done with the knowledge of intent since it was not the purpose of the Vermont

Education Department to mandate a particular curriculum to the public schools, but rather to encourage creative teachers to implement the reasoning skills whenever appropriate in an inter-disciplinary manner.

When it was mentioned that the lack of coordinated sequential reasoning curriculum would cause some difficulty for testing of minimum competencies before graduation, Stevens indicated that the local school district could develop whatever means of testing the reasoning competencies that they felt would be fair to their locally implemented reasoning curriculums.

At the suggestion of Stevens, the students in the "Materials and Methods in Elementary Education" class actually taught their own proposed reasoning activities to the rest of the members of the class.

The final result of the practicum was the inclusion of the Critical Thinking Unit in the required education course syllabus, "Social Studies In The Elementary School". Since this course is required for all elementary education majors at Castleton State College, this means that all Castleton State College graduates in elementary education will receive instruction in the area of critical thinking during their undergraduate years.

V. DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS

Through classroom discussion and research for this practicum, it became obvious that further research and modifications of the critical thinking unit will be necessary. For example, additional student activities using various approaches besides Bruner's discovery learning method, need to be included in the unit. Snelbecker indicates even Bruner evidences the dilemma to what extent he supports the discovery learning approach as the preferred universal learning method, whereas upon occasion he feels that discovery learning is only one of many good learning methods.¹⁶

Not only did the summer session students indicate a greater knowledge of how to teach critical thinking skills after the unit was presented during the summer session, but several students expressed an increased awareness as to their own use of the critical thinking skills. This result is not too surprising since Taba, in a 1964 study,¹⁷ had found that when students were taught specific critical thinking skills they became better evaluators of data.

The fact that all of the summer session students felt that Bruner's The Process of Education did not describe the discovery method in enough detail was somewhat perplexing. A more appropriate textbook, Bruner's Toward A Theory of Instruction, which will be used in future teaching of the unit, discusses the four principles of the discovery learning method as the following:

1. Predisposition to Learning
2. Structure and the Form of Knowledge
3. Sequencing
4. Form and Pacing of Reinforcement¹⁸

Not only is there a question of the extent to which Bruner's discovery learning method could be used successfully, but the fact that the State Education Department merely suggests that each local school district teach the reasoning skills and test their mastery by whatever method they choose, seems to also disagree with some of the concepts proposed by Bruner. It is interesting to note that the method by which the Vermont Education Department planned to implement the reasoning competencies assures much of the reasoning competencies will not be taught in a sequential manner. Bruner makes it obvious that, "What matters is that later teaching build upon earlier reactions to literature that it seek to create an even more explicit and mature understanding It is not amiss to urge that actual curricula be reexamined with an eye to the issues of continuity and development"19 It is evident that this will not occur in many school districts in Vermont.

FOOTNOTES

¹ Virginia Larrabee and Robert Forest, Castleton State College Elementary Program Competencies. Castleton, Vermont: Castleton State College, 1977, p. 2.

² Vermont Department of Education, Basic Competencies: A Manual of Information and Guidelines for Teachers and Administrators. Montpelier, Vermont, March, 1977, pp. 3-4, 16.

³ David P. Wright, Instruction in Critical Thinking: A Three Part Investigation. Meeting of the American Education Research Association, April, 1977, ERIC Document ED 138 518, p. 9.

⁴ Ibid, p. 2.

⁵ Benjamin S. Bloom, Taxonomy of Educational Objectives-Handbook I: Cognitive Domain. New York: David McKay Company, Inc., 1968, p. 185.

⁶ Brian Burnham and Joseph Murphy, Measuring the Moral Reasoning Power of Elementary School Students: A Report of a Two-Year Study. Toronto: Ontario Department of Education, ERIC Document ED 138 485, 1976, p. 123.

⁷ Hilda Taba and others, Thinking In Elementary School Children. California: San Francisco State College, ERIC Document ED 003 285, 1964, p. 171.

⁸ Jerome S. Bruner, Toward a Theory of Instruction. New York: W.W. Norton and Company, Inc., 1966, p. 43-44.

⁹ Jerome S. Bruner, On Knowing: Essays for the Left Hand. New York: Atheneum, 1965, pp. 82-83.

¹⁰ Glenn E. Snelbecker, Learning Theory, Instructional Theory and Psychoeducational Design. New York: McGraw-Hill Book Company, 1974, pp. 424-426.

¹¹ J. Richard Suchman, "The Illinois Studies In Inquiry Training", In Richard Ripple and Verne Rockcastle, editors, Piaget Rediscovered. Cornell University: A Report of the Conference on Cognitive Studies and Curriculum Development, 1964, pp. 105-106.

¹² Jerome S. Bruner, Teacher's Guide to Man: A Course of Study. Washington, D.C., Curriculum Development Associates, Inc., 1971, pp. 1-2.

¹³Jerome S. Bruner, The Process of Education. New York: Vintage Books, 1969, p. 20.

¹⁴James Lengel and John Stevens, Teacher's Guide for Reasoning. Montpelier, Vermont: State Department of Education, 1976, p. 5.

¹⁵Ibid, p. 1.

¹⁶Snelbecker, Op. Cit., p. 429.

¹⁷Taba, Op. Cit., p. 171.

¹⁸Bruner, Toward a Theory of Instruction. pp. 40-70.

¹⁹Bruner, The Process of Education. pp. 53-54.

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APPENDIX A

A CRITICAL THINKING SKILLS - REASONING
COMPETENCIES UNIT

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INTRODUCTION

Although the majority of the following unit includes materials presented in the Vermont State Department of Education's Teacher's Guide For Reasoning, the title of the unit has been expanded to that of A Critical Thinking Skills Unit. This is because of existing modifications that have been made and are planned in the future to be made to the original State Education Department document.

Many of the present modifications and suggested activities are the result of work done by members of the 1978 summer sessions class, "Materials and Methods in Elementary Education." In particular, Mrs. Eula Bannister has worked extensively in developing the reasoning competencies in both the science and social studies areas.

Since we are in the middle of a curriculum revolution, the state of Vermont must incorporate within the new curriculum structure the Basic Competencies as mandated. Among those competencies, reasoning could be considered as paramount. To have skills become an integral part of every child, they must be incorporated in all subject areas so should be underwritten in all curriculum change.

As new curricula are written, there may be many that utilize the "promising new development" as outlined by Michaelis in Social Studies for Children in a Democracy.¹ This "links together the inquiry, conceptual, and topical approaches". It would appear to be a very practical approach to social studies in our state as these new reasoning competencies emerge. It is the classroom teacher who must assume the

primary responsibility for teaching these competencies.

What is reasoning? It has been defined by the State Department of Education as :

"For our purposes reasoning is a process inclusive of, but not limited to problem solving, classification and organization, making reasoned judgments, and logic. These processes are affected by such variables as conditions, environments, and abilities. Definitions and suggested assessments deal essentially with reasoning in the cognitive area."²

Social studies is an area that reasoning competencies adapt to very readily.

Facts change. They go out of date. Skills don't. Thus to provide children with something they can use for the rest of their lives, teach them the skills that go into effective thinking. That's the basic position for using social studies to teach children how to think.³

If this theory is accepted then the next logical question is what specific activities can be used to teach children these reasoning skills? These strategies in the state of Vermont could be taught within the framework of the fifteen Basic Reasoning competencies as outlined in 1976 by James Lengel, John Stevens, and the Reasoning Task Force Committee.

It is the purpose of this unit to show that all of the reasoning competencies could be included in any or all social studies units that are taught. This follows the suggestion by the State Department of Education that no basic competencies should be isolated from the current curriculum, but rather be presented in all facets of subject areas at all levels. The following list of suggested student activities have attempted to do this.

"It is important to keep in mind that pupils may practice each skill for several years before they are ready for mastery".⁴

The following teaching activities could be modified for many other areas of the Social Studies Curriculum. They might also be adapted to "activity centers" found in many elementary classrooms.

BASIC COMPETENCIES IN REASONING

1. The pupil can observe and report data from an experience.
2. The pupil can identify the problem or issue presented in an experience.
3. The pupil can suggest possible causes of a problem.
4. The pupil can suggest some solutions to a problem.
5. The pupil can predict consequences of problem solutions.
6. The pupil can identify similarities and differences between items.
7. The pupil can put items into groups as described by others.
8. The pupil can put items into his/her own groups, and explain the criteria used.
9. The pupil can put items into serial order.
10. The pupil can distinguish between statements of fact and statements of opinion.
11. Given a dilemma situation, the pupil can take at least two positions and give reasons for each.
12. From a chart, graph, table, map, or list of facts, the pupil can state a summary or conclusion based on the data.
13. From a list of data, and several possible conclusions, the pupil can identify those conclusions which could be validly drawn from the data.
14. The pupil can gather data on a given topic from at least three different sources.
15. The pupil can select and organize data on a given topic into a meaningful report.

REASONING

POSSIBLE TEACHING ACTIVITIES

1. THE PUPIL CAN OBSERVE AND REPORT DATA FROM AN EXPERIENCE.

This page describes several activities which teachers may do with their pupils to practice the development of reasoning skills. They are appropriate for various ages and grade levels.

- a. **PICTURE OR CARTOON REPORT.** Have the students look carefully at a picture from their textbooks or from a large picture on the board. Ask them to significant details and interesting items.
- b. **FEELY BOX.** Place an object with interesting tactile characteristics in a large box with a hole in the top. Have the students use their sense of touch, without looking, to report data concerning the object. Encourage them to list carefully the characteristics of the object before guessing what it is.
- c. **LISTEN AND REPORT.** Have the students listen to the sounds in their classroom, nature sounds, or a tape or record, and report in detail what they hear.
- d. **SURPRISE APPEARANCE.** Arrange to have a fellow teacher or student from another class make a quick, surprise appearance in your class. Have him/her dressed unusually and carrying unusual objects. He/she should come in, make a commotion, and leave quickly. Afterwards, ask the class to describe, in detail, the person who came in - as if they were writing a description for an all points bulletin.
- e. **NEWSPAPER ARTICLE.** Have the students read and report the pertinent data from an appropriate newspaper article.
- f. **LOCAL AERIAL VIEW.** Bring to class an aerial view of the community, town, or city. Have children locate their homes. Locate other items of interest and ask children, after discussing physical and cultural features, possible reasons for their locations. As a follow up, take a field trip by walking or bus to some of these places so children can observe if their reasons for location are valid.

* Those teaching activities developed by members of the 1978 summer session class, "Materials and Methods in Elementary Education".

REASONING

POSSIBLE TEACHING ACTIVITIES

2. THE PUPIL CAN IDENTIFY THE PROBLEM OR ISSUE PRESENTED IN AN EXPERIENCE.
3. THE PUPIL CAN SUGGEST POSSIBLE CAUSES OF A PROBLEM.
4. THE PUPIL CAN SUGGEST SOME SOLUTIONS TO A PROBLEM.
5. THE PUPIL CAN PREDICT CONSEQUENCES OF PROBLEM SOLUTIONS.

These four competencies are best considered together, using a single example to work with each of them in turn. The examples below are appropriate to several age levels.

- a. PICTURE OR CARTOON REPORT. Obtain a picture or cartoon which portrays some kind of problem or issue, at a level appropriate to the pupils. Ask them to state simply what the problem or issue is. The class may offer several different statements of the problem. #2

Then ask for suggestions as to possible causes of the problems the pupil(s) have identified. Encourage them to see that the problem may have several causes. #3

The next step is to have the pupils generate possible actions which could be taken to solve the problem. Encourage them to come up with solutions which attack each of the causes of the problem they have identified in #3 above. #4

For each of the problem solutions the students have suggested, they should examine the consequences of a single action can have wide ramifications on other areas. #5

- b. LETTERS TO PARENTS. Pupils will write letters to parents asking each what they feel the greatest problem is in their community. Take all answers received and have children group them as similar problems. Have students decide which problem is of the greatest concern.

Children can now try to suggest possible causes. Obtain all local material pertinent to the problem. (Be sure to include pictures at the primary level) #2

With these materials students will be able through discussion to suggest possible solutions. #3

Bring in a local person that has knowledge of the problem and allow the children to present their solutions to him/her and discuss their feasibility. #4

Pupils have enough background to now predict consequences of their solutions. For a culmination activity construct a model of the problem corrected according to their consequences. If this does not adapt easily to construction, another possibility would be the making a booklet, including a sampling of letters, reports on the local person interviewed and original art work of the problem corrected. Place this in the town library for public relations. #5

6. THE PUPILS CAN IDENTIFY SIMILARITIES AND DIFFERENCES BETWEEN ITEMS.

- a. RURAL/URBAN PIX. Place large pictures of a rural and urban area on the bulletin board. Ask the students to observe and report the similarities and differences between the settings.
- b. WANT ADS - CARS. Have the students read six want ads describing cars. Have them report three similarities and three differences in the description of the cars for sale.
- c. OLD PICTURES. Get old pictures of interesting places in the community and have copies made for children's use.

With a camera and black and white, film (This makes for easier comparisons.) delegate children to take pictures of the same places. (If this isn't feasible take the pictures yourself.)

Children can now observe and report similarities and differences noted. Include in discussion how changes might have been caused and why.

If some children live in an older house in the community try this activity on an individual basis.

7. THE PUPIL CAN PUT ITEMS INTO GROUPS AS DESCRIBED BY OTHERS.

8. THE PUPIL CAN PUT ITEMS INTO HIS/HER OWN GROUPS, AND EXPLAIN THE CRITERIA USED.

These two competencies are best considered together. Both involves the ability to group data by meaningful criteria; in #7 the pupil follows someone else's directions, while in #8 he/she must design his/her own group definitions. The following examples are appropriate to several age levels.

- a. **ATTRIBUTE BLOCKS.** Let the pupils explore and manipulate these blocks of several colors, shapes, and sizes for a time. Then direct them to put the blocks in piles defined by one or more attributes, e.g., "Put all the red blocks here and the blue blocks there," or, "Put all the round, red blocks here in one pile and the square, blue blocks in another." #7. You may also ask them to put the blocks into groups, and to be ready to explain how they grouped them. Encourage the pupils to come up with as many different groupings as they can. Always make sure to have each pupil explain the group criteria used. #8. Instead of attribute blocks, objects such as buttons or bottle caps, may be used.
- b* **ADVERTISING FOLDERS.** Obtain advertising folders for each child of houses open to the public, amusement parks, shops or boutiques, shopping centers, ski areas, etc.. On large poster paper designate areas as residential, commercial, industrial, or recreational. Bring out in discussion reasons for the location of each area.

Distribute folders. Have each child decide which area of the community their folder(s) should be placed in.

Cut pictures from folders and place on "poster community". Have children use their imagination utilizing their pictures to attractively "advertise" their place.

Then decide on name for community and label. (If enough folders can not be acquired use colorful magazine advertisements.) #7.
- c* **SMALL ITEMS.** Collect many small items familiar to the student from the community. These should include small items manufactured in the area, items that can be bought in different local stores, and items that are from the local physical environment. Have several children group them in different ways explaining criteria used.

Using these items and yarn to show groupings, prepare a bulletin board choosing one grouping children have suggested. Using ribbon encircle them all with an arrow pointing to the main title "Things from My Community Jonesville". #8.

9. THE PUPIL CAN PUT ITEMS INTO SERIAL ORDER.

- a. **HISTORICAL EVENTS.** After study of a particular time period or historical event, have the pupils recall in what order particular events occurred. This strategy might also be generalized to broader concepts such as the sequence of man discovering fire, beginning to cultivate his own food, etc., or to predicting future events in probable order.

- b* **COMMUNITY BOOKLET.** To teach the relationship of the concept of "community" to the concept of the "universe" have students make a booklet titled "Where Am I ? " Using the vocabulary: home, community, county, state country, world, universe; have the children make a page using maps, original art works, or magazine pictures and arrange pages from the smallest unit to the largest. Label each page appropriately such as: I am part of a home, etc..

Another worthwhile activity is to prepare lists of the population of 10 towns and cities including their own. Have these placed in serial order.

10. **THE PUPIL CAN DISTINGUISH BETWEEN STATEMENTS OF FACT AND STATEMENTS OF OPINION.**

- a. **ADVERTISEMENTS.** Have pupils cut three ads out of a newspaper or magazine. Have them underline in red the statements that are fact, and underline in blue the statements that are opinion. Pupils can then discuss the reasons for their choices.
- b. **HISTORY TEXTBOOK.** Obtain a classroom set of a traditional history textbook. Choose a page at random, and carefully examine one or two paragraphs. For each sentence, determine whether it is a factual one or an opinion. Then, for each opinion statement, have the pupils list which facts would be necessary to back up or substantiate the opinion.
- c* **TOURIST GUIDE.** Using a state tourist guide or other published material of their town (usually written on a grade level that upper elementary students could understand) choose sentences and print on separate slips of paper. On a flannelboard or bulletin board arrange these in two columns "fact" or "opinion" after fully developing the words fact and opinion.

This is a good way to develop concepts of fact or opinion as it is dealing with the student's own world, they are familiar with before deciding fact or opinions in the abstract.

11. **GIVEN A DILEMMA SITUATION, THE PUPIL CAN TAKE AT LEAST TWO POSITIONS AND GIVE REASONS FOR EACH.**

- a. **MORAL DILEMMAS.** Obtain the set of "Dilemmas to Stimulate Moral Discussion" from the State Education Department. Use these dilemma stories to begin a discussion with pupils. Dilemmas which arise in the context of regular school work are even better; historic characters facing difficult decisions would be one example.

- b* **FIELD TRIP.** Take a field trip around the community. Note all examples of vandalism. Point out those in particular that could have been caused by elementary children (ie.- defacing signs or other property.

In a discussion, have children bring out all reasons that children might have done these acts. Using these reasons, elicit possible ways of preventing the destruction.

As a community involvement activity some project might be started whereby children could in a small but constructive way help by cleaning up signs. This could act as a proving ground for their positions and plant an early seed for community pride.

12. **THE PUPIL CAN STATE A SUMMARY OR CONCLUSION BASED ON DATA FROM A CHART, GRAPH, TABLE, MAP, OR LIST OF FACTS.**

- a. **TOPO MAP.** Present a topographical map of a mountainous area to the pupils. Ask them to determine whether it would be easier to climb Mt. A or Mt. B, and give reasons why.
- b. **ROAD MAP.** Present pupils with a road map of Vermont. Have them each determine the most direct driving route between two given places.
- c* **TOWN REPORTS.** Collect town reports for the past ten years. Either compile or have students compile (based on age or ability) a list of years with the cost per pupil for education. Compile a large, simple, line graph, as a group, to show how the cost of education has climbed rapidly.

Using play money have a child place end to end \$100 bills to show the cost for one child.

Construct a permanent bulletin board so children will continually be aware of spiraling costs.

Make a mobile depicting the elemental items paid for from the budget.

At this age the number of dollars spent for each child should have a shocking effect and create a desire to be saving in using school supplies, and to show proper care in the use of books or equipment.

Point out the saving of just 1¢ to 5¢ pencil a year for 500 students could save \$25.

13. FROM A LIST OF DATA, AND SEVERAL POSSIBLE CONCLUSIONS, THE PUPILS CAN IDENTIFY THOSE CONCLUSIONS WHICH COULD BE VALIDLY DRAWN FROM THE DATA.

a* PICTURES OF DIFFERENT JOBS. Gather pictures of different jobs available in the community. Prepare strips of statements that would be pertinent to each of these. Have students individually match these. This could be prepared so it would be self correcting.

Children could be asked to add one more fact strip for each worker.

14. THE PUPIL CAN GATHER DATA ON A GIVEN TOPIC FROM AT LEAST THREE DIFFERENT SOURCES.

15. THE PUPIL CAN SELECT AND ORGANIZE DATA ON A GIVEN TOPIC INTO A MEANINGFUL REPORT.

a. This skill is best assessed as the students do research work in subject areas such as social studies and science. Teacher assigned or self chosen topics may be used; pupils should be encouraged to gather data from diverse and unusual sources, as well as from the normal reference. Some examples of topics and possible sources follow.

TOPIC: "The Necessity of the NASA Space Program"

SOURCES OF DATA: . Opinions of citizens in local community
 . Encyclopedia
 . Time of 1960 era
 . NASA publications in school library
 . Biographies of astronauts
 . etc.

TOPIC: "The Great Flood of 1927 in Vermont"

SOURCES OF DATA: . Interviews with flood victims
 . Old photos in Vt. Historical Society
 . A film of the flood
 . Local newspapers of 1927
 . etc.

b* Divide the class into five groups each representing one area of a community-rural, recreational, commercial, residential, and industrial.

Ask each group to compile an oral report on each area using three sources for investigation - interviews, pictures, and text to compare the local area to similar area in text. Bring out the idea of the necessity of using more than one material source.

Obtain one person for each area that could represent that area best, to come to the class for an interview by the group involved.

Have each group locate and bring in pictures of local area that they are investigating to be incorporated in their report.

Use a tape recorder to record each final report for two reasons (1) so each group can evaluate themselves, and (2) to use as a part of the teaching aids for comparing different areas of any community.

This activity will need adapting to local conditions.

FOOTNOTES

¹John U. Michaelis, Social Studies for Children in a Democracy. Englewood Cliffs, N.J.: Prentice Hall, Inc., 1976, p. 21.

²James Lengel and John Stevens, Teacher's Guide for Reasoning. Vermont State Department of Education, 1976, p. 5.

³David A. Welton and John T. Mallan, Children and Their World: Teaching Elementary Social Studies. Chicago: Rand McNally Company, 1976, p. 36.

⁴James Lengel and John Stevens, Teacher's Guide for Reasoning. Vermont State Department of Education, 1976, p. 1.